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TITLE: Ft. Sam 91 Whiskey Combat Medic Medical Simulation Training Quantitative Integration Enhancement Program

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14. ABSTRACT

This document includes the primary accomplishments for the reporting period, 4/1/05 – 3/31/06. The primary accomplishments during this period include (1)No cost extension 9/10/05; (2) initiated critical review to provide a best-value solution for DCMT research requirements; (3) completed initial SIMS configuration planning to meet DCMT requirements.

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Introduction

The training of the combat field medic is a critical need of the United States Army. The 91W program at Fort Sam Houston, Army Medical Department (AMEDD), Department of Combat Medic Training (DCMT), trains over 7,000 Combat Field Medics per year. Increased training consolidation in the armed services has put increased demands on the training program at the DCMT at Fort Sam Houston (FSH). Efficiency and effectiveness of training are important goals that are continually undergoing evaluation by the leadership structure of the DCMT.

To ensure a continuous quality improvement implementation strategy, the DCMT training center leadership requires feedback on the type of training needed by combat field medic trainees. They are also in need of information concerning how to revise the curriculum to continually meet a high state of readiness to support the Army's medical mission. Additionally, it is beneficial to understand how a soldier's previous experiences, as well as their participation in various continuing education activities, influence their performance on critical skills. There is a need for formalized assessment of combat field medic skills retention and investigation of the ideal method of retraining, taking into account previous experience.

This project intends to introduce the UPMC methodology of simulation and instruction to the DCMT by utilizing the expertise of the Peter M. Winter Institute for Simulation Education and Research (WISER).

Body

The following is a description of the project accomplishments for the effort associated with this award.

Administrative

During the timeframe covered by this report, Dr. John Schaefer, Steve Palumbo, and Tracee Grubber resigned from their positions at UPMC and WISER. UPMC transitioned Dr. Paul Phrampus to the role of Principal Investigator to the project. Aaron Yanuzo was assigned to the project as Program Director.

On September 30, 2005, UPMC submitted a request for a no-cost extension to extend the project to October 31, 2006.

Logistical Details

Kick-Off Meeting – Fort Sam Houston. The UPMC team met with the DCMT leadership personnel for a project kick-off at Ft. Sam Houston on July 26 - 27, 2005. Discussion centered on the changes that have occurred in the 91W training program since the original assessment was performed in 2003. UPMC received a tour of the facilities.

Operational Review – 9/2005. Tom Dongilli performed an operational review of the DCMT's simulation program in September, 2005. During this visit, he defined several areas that could benefit from WISER expertise, including curriculum development and documentation management. A system that would allow for an electronic paperwork trail documenting training is highly desirable.

WISER Meeting – Pittsburgh. LTC David Hernandez, DCMT, and Chris Kwader, DCMT Simulation Coordinator, attended a tour of the WISER Center in Pittsburgh on September 26 – 27. After this visit, LTC Hernandez reviewed the information he received with Col Hastings.

SIMS Software. Beginning development of the SIMS v1.0 software took place during this report period. This software will provide the platform for the programs planned for deployment at the DCMT.

Operational Review – 2/2006. Dr. Phrampus, Tom Dongilli, and Tracee Gruber met with the DCMT leadership at FSH on February 20 – 21, 2006, to conduct an additional review the operations of the Ft. Sam simulation program. This visit was necessitated due to changes that took place at the DCMT after the prior operational review.

During this visit, the UPMC team identified several barriers facing DCMT leadership. As noted during the prior visit, paperwork reduction is still a concern. A key element in paperwork reduction would be the creation of an effective methodology to track and evaluate the students' post-training experiences. However, DCMT leadership expressed

that recent curriculum changes at the DCMT have eliminated the need for additional UPMC curriculum development.

The following areas could potentially be improved by utilizing UPMC expertise.

- Workflow improvements through utilization of the SIMS application and database.
- Development of academic standards.
- Implementation of data collection technology.
- Additional personnel and instructor training.
- Identification of additional equipment needs

At the end of this reporting period, LTC David Hernandez and COL Patricia Hastings were in the process of reviewing the suggestions with the intent to provide feedback towards the next project steps.

Statement of Work

Confirmation of Needs Analysis
Update and confirm findings of WISER 2003 Ft. Sam 91 W "Needs Analysis".

UPMC Project Directors: **John Schaefer, MD, Ron Walls, MD**
US Army Principal Investigator: **Col Hastings**

Timeframe	Task	Results
Week 1	1. On-Site Survey of Ft. Sam Houston 91 W Combat Medic Simulation Program to re-assess current status of medical simulation program. 2. Incorporate "lessons learned" from 91 W training effectiveness in terms of reflection of Combat Medic readiness for roles in recent conflicts.	An onsite survey was completed twice during this reporting period. See "logistic details" section within the report body for more information.
Week 2-3	1. Compile and distribute results of updated needs analysis.	Completed.
Week 4-6	1. Project Initiation Workshop (PIW) to establish a project plan and assign responsibilities for WISER team based on incorporation of updated needs analysis into an updated proposal. 2. Order Hardware.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.

Timeframe	Task	Results
Week 7	1. Equipment received and tested by WISER.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.

Work with Ft. Sam and relevant existing consultants to improve the Ft Sam Medical Simulation Program Management.
UPMC Principal Investigators: Michael Murphy, MD, Thomas Dongilli
US Army Principal Investigator: To Be Named

Timeframe	Task	Result
Week 5-6	1. Meet with existing program leadership to review recommendations of project in terms of program management and build consensus for specific recommendations for changes in administrative, operational educational and technological program support. 2. Install new equipment.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Week 7-9	1. Develop guidelines and policies for medical simulation program management. 2. Identify organizational assets to support program management. 3. Re-align organizational assets to support program management plan.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Weeks 10-12	1. Develop and implement Instructor support system of training and quality assurance.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.

Create proto-typical simulation laboratory and classroom modules.

UPMC Principal Investigators: **John Schaefer, MD, Ron Walls, MD, Michael Murphy, MD, Walt Stoy, PhD**
US Army Principal Investigator: **To Be Named**

Timeframe	Task	Result
Weeks 5-8	1. Complete specifications of laboratory-based modules. 2. Complete specification of classroom-based modules.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Weeks 8-14	1. Develop formal goals and objectives for each of the laboratory and classroom modules. 2. Develop content for facilitator and trainee curriculum for each of the modules. 3. Develop web site content for each of the modules. 4. Develop simulation scenarios to support educational goals.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Weeks 15-21	1. Educational validation and evaluation through pilot implementation. 2. Preparation for full implementation.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.

Deploy Simulation Information Management System (SIMS).

UPMC Principal Investigator: **John Lutz**
US Army Principal Investigator: **To Be Named**

Timeframe	Task	Result
Weeks 6-8	1. Complete engineering specification for reporting/notification infrastructure. 2. Complete specification for integration with existing Ft. Sam Intranet infrastructure.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.

Timeframe	Task	Result
Weeks 9-13	1. Complete Ft. Sam Prototype of WISER SIMS.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Weeks 14-15	1. Begin installation and integration of Ft. Sam SIMS. 2. Complete testing Ft. Sam SIMS at Ft. Sam Houston.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.

Assess effectiveness of training interventions.

UPMC Principal Investigator: **Walt Stoy PhD, John Schaefer, MD, Ron Walls,MD, Michael Murphy, MD**
US Army Principal Investigator: **To Be Named**

Timeframe	Task	Result
Week 14	1. Validate medical simulation performance evaluation tools that reflect the specific goals & objectives of the medical simulation educational program.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Weeks 15-20	1. Utilize the performance evaluation tools to assess the baseline effectiveness of the existing program and to establish benchmarks for effectiveness at various stages of training within the current 16-week program.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Weeks 21-37	1. With implementation of the new medical simulation educational modules, assess the effectiveness of the educational intervention through pre- and post-assessment.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Weeks 38-40	1. Assess the net effectiveness of the new medical simulation educational interventions with the old system of simulation training.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.

Micro-Simulation Learning System Integration

WISER Principal Investigators: **Walt Stoy PhD, Ulrich Christensen MD,**
                                       Michael Murphy, MD
US Army Principal Investigator: **To Be Named**

Timeframe	Task	Result
Week 2	1. Obtain from Sophus the goals and objectives in reference to each simulation scenario.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Week 3	1. Link micro simulation scenario evaluations of individual trainees into simulation information management database.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Weeks 15-20	1. Cross-reference 91W goals & objectives to micro simulation scenario training goals identified in step one. Develop recommendations of specific scenarios to utilize and when as a function of the 91W training schedule. **2.** Develop schedule of micro simulation training assignments within the existing Learning Resource Centers.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Week 37	1. Implement integrated micro-simulation training schedule recommendations.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.

Timeframe	Task	Result
Weeks 38-40	1. Collect performance data from completed micro simulation training assignments to develop benchmark of performance in this area as a function of training level and score. Benchmark would be used to assign meaningful performance scores to individual learning outcomes from the micro simulation software. 2. Develop list of optional recommended micro simulation training assignments as a function of training level And make Learning Resource Centers available to trainees for use in "down time periods" or off-hours for supplemental learning. Monitor the use of this.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.

Preliminary development of 91 W sustainment program.

UPMC Principal Investigator: **Walt Stoy PhD, Michael Murphy, MD**
US Army Principal Investigator: **To Be Named**

Timeframe	Task	Result
Week 30-34	1. Identify key 91W knowledge, skills, and judgment judged most likely to have fatigued.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.
Week 35-40	1. Identify the extent to which *existing* 91W program graduates acquired proficiency in key evaluation, procedural and judgment skills while training at Fort Sam Houston. From this, develop a list of terminal training deficiencies.	Not completed. DCMT leadership requested a change in original project scope, which impacted all deliverables in this SOW.

Key Research Accomplishments

During this report period, the original research program was determined by DCMT staff to be obsolete due to organizational changes. An alternate research focus remained under discussion with DCMT leadership staff at the end of this reporting interval.

Reportable Outcomes

During this report period, no final outcomes were developed. The project is in process and under revision.

Conclusions

Organizational and staffing changes at DCMT resulted in a determination that the original statement of work and research program no longer met the needs of the DCMT.

The research program underwent critical review to meet the needs of the DCMT following significant organization and staffing changes. A reviewed statement of work and research plan is projected.

References

This report did not require the use of documented reference material.

Appendices

Ap. 1 – Kickoff Meeting agenda.

Department of Combat Medic Training
Winter Institute of Simulation, Education, & Research
26-27 July 2005

<u>**Tuesday, 26 July 2005**</u>   **Bldg 1374 Room 120**

0800-0830	Introductions	COL Hastings Dr. J. Schaeffer Mr. Harvey Magee
0830-0900	91W Program Overview	COL Hastings
0900-1000	Contract Review / Executive Summary	Mr. Harvey Magee
1000-1015	Break	ALL
1015-1045	Timeline Review Discussion	Dr. J. Schaeffer
1045-1115	Communication Process	Dr. J. Schaeffer
1115-1145	Research Agenda	Dr. J. Schaeffer
1145-1215	Priorities & Concerns	COL Hastings
1215-1230	Open Discussion (Q&A)	Mr. Harvey Magee
1230-1330	Lunch	Provided
1330-1530	Tour Simulation Labs	Mr. Chris Kwater
1530-1630	Wrap-up	Mr. Harvey Magee COL Hastings

<u>**Wednesday, 27 July 2005**</u>

0800-0900 Site	Observe Training STX	All	STX
0900-1000 Site	Observe Training STX Trauma	All	STX
1000-1015	Break		
1000-1100	Observe Training CTPS	All	Room
1100-1200	Exit Brief	COL Hastings	

Subject	Issue/Concern	Discussion
General	Abundance amount of paperwork that is created daily and the amount of time it takes to process the paperwork.	
	Resources needed to address administrative needs and paperwork.	
	Storage for the paperwork are concerns	

Conclusions:

- SIMS (Simulation Information Management System) can reduce or eliminate a significant amount of paperwork. Forms are collected in a centralized database which allows for instantaneous on demand reporting of results and automated results that can be emailed to specific administrators and/or instructors.
- SIMS makes it trivial to see who has completed what. Reports can show what evaluations, surveys or quizzes need to be completed by individuals and what they have completed.
- Online quizzes can be automatically scored and reported on.

Subject	Issue/Concern	Discussion
Current Process	Each trainee uses their hand book, reviews and practices what they are expected to learn in the lab. The instructors walk from station to station and perform general overviews of trainee performances. No standardized evaluation tools are currently used.	By supplying trainees with automated scenarios that capture performance and also supply feedback to the trainees will capture standardize evaluation.
Simulation Labs	The use of the labs is at the discretion of the instructors which makes the labs under utilized	Introduction of process automation and data management can lead to improved utilization.
	No standardized evaluation tools	Standardized automated scenarios are a useful tool that capture performance and provide the ability to give feedback to the students.
	Reservation process for labs is labor intensive	Automated scheduling of labs will facilitate ease of use and reduce resources needed to maintain.
	No ability to display curriculum and trainee feedback	Increase audio visual capabilities in the Labs, to support SIMS and feedback capabilities.

Conclusions:

- SIMS training session curriculum is located on a web server and the SimMan scenarios are programmed into the mannequin. This would allow the trainees to practice sessions, be objectively evaluated and retrain based on areas that they are deficient in. This will also allow the program to look at how trainees are performing both individually and as a whole, and adjust the curriculum if needed. Each station should be standardized and automated to insure consistency for each trainee.
- Sims allows a semi-automatic scheduling feature for the labs that will improve utilization and also introduce a data management system. The simplicity of this process will free personnel for other duties.

Subject	Issue/Concern	Discussion
IT Review	No internet access is available to the trainees. Trainees and instructors will need regular access to the network for online form completion and course content.	Col. Hernandez stated that they were looking into this and what resources and funds it would take to make this available. Identifying the network connections, band with, equipment needed and resources will be needed.
	There are three computer labs with many PC's in each. Two labs are underutilized and one lab is opened to only those who are having academic issues.	With the installation of SIMS, and online course content, the labs can be utilized as a resource and also a teaching facility.
	Current PC's at Ft. Sam are set up for SIMS and capabilities	Need to assess current PC's at Ft. Sam and identify specs. PC's may need upgraded to meet certain requirements.
	Some areas have no PC's, most have no projectors and screens.	Need to identify areas that will need PC's, projectors and screens in order to use SIMS forms and also to display curriculum. Purchase the PC's, projectors and screens for those areas.

Conclusions:

- SIMS allows you to display the curriculum and performance evaluations in each room at each station.
- SIMS allows access over the Internet or intranet of course material, surveys and evaluations to be completed for courses.
- Administrative personnel can review an instructor's evaluations immediately upon completion of a class as opposed to the current process which takes many weeks to review the results.
- By installing SIMS, instructors will be able to review course evaluations immediately after the session.

Subject	Issue/Concern	Discussion
Situational Training Exercises	Feedback Process - with only 5-6 instructors that rotate to other areas fairly often, there is a need to automate as much of this process as possible	• Due to the lack of data collection capabilities, the stations are not used for grading.
	Paperwork & Process Improvement	• Once all medics have rotated thru, the next problem was paperwork. Filling it out, reviewing and storing it. With the current paper system, more time needs allotted for getting current student lists, rotation of schedules, etc. SIMS could alleviate all of this.
	Automated Scenarios, resources utilized	• The Laerdal Instructors will come in, turn on the simulators, set the parameters manually, and then leave. With the capability of having the scenarios automated with instructor training, this process could be completed by the instructor without the additional personnel needs.

Conclusions:

- Installing SIMS and automating scenarios with data capture capabilities, each session could be recorded and documented.
- Trainees and instructors could review performances using SIMS with a projector and screen to debrief and have the performance data captured into the database.
- By using SIMS, operations could review trainee performance, trainees could review their own performance, and data collection for research is now possible. SIMS enables the absence of storage and processing costs.

Subject	Issue/Concern	Discussion
Micro Simulation Lab	With minimal or no IT support, having one instructor in the room spent most of time addressing PC related issues (not logging in, card won't work, lost students, etc…). This frustrates the trainees who were ready to proceed.	• Increase the instructors to two, or have IT or another instructor be there for the first 20 minutes of the course. • SIMS can support this by having a "Help" section for this station.
	Having no performance assessment for trainees or customized feedback.	• There is no evaluation for grading at this station. There is no ability to link the trainees' performance data in the Micro Sim lab with any of their performance data on the patient simulators, didactic quizzes, etc.
	Increase the utilization of the lab and also produce tools for documentation and feedback.	• Automate as much of a course as possible. Install support aides for trainees and course content.

Conclusions:

- Implementation of an assistance plan for each station consisting of tip sheets, diagrams etc… This should be done for both trainees and facilitators and put online so it is always available.
- SIMS provides post session surveys and tests.
- SIMS will increase the utilization of the labs. From course content to survey and evaluation completion.

Subject	Issue/Concern	Discussion
Operations	No automated scenarios with data capture and feedback capabilities. There are no official processes for facilitators and curriculum developers to request and specify what type of scenarios and the logistics of each.	• First phase would be to automate existing scenarios and program data collection and feedback capabilities. • Then train instructors on how to run scenarios based on these improvements.
	Lack of detailed training by instructors to program and teach how to use SimMan software 2.3 / 3.0. Current programming is at a 1.4 version level of utilization. This is very time consuming and difficult to use by the end users.	• Training the Laerdal instructors on programming with the 2.3 version or higher and use the forms to assist them as well as program all existing sessions. Then we could move on to other requests.
	Pre-course check lists, equipment inventory and repairs.	• Install / create online forms for instructors to use that will guide them on room set up, repairs and maintenance. Automate an equipment management program.
	Lack of feedback or slow process to the operations team, pertaining to course evaluations.	• The operations team may never see the evaluations due to them going to the curriculum team.

Conclusions:
- The majority of the issues that are related to operations revolve around processes and training. By automating where applicable, and training those who will be using and teaching others SIMS and the administrative processes around SIMS.
- Recommendation for long term effectiveness would be to have each instructor (6) take the two day train the trainers' course, or it can be taught on site.
- SIMS would allow the team to review any course evaluations and specifically evaluations related to equipment.
- We have created forms that assist the scenario programmers and guide them to completion. We would need to implement these forms there. This would help the programmers and also help guide the instructor who is requesting the scenario.

- By placing these forms online, all instructors will have access. This will also enable the scenarios to be in a central location on the intranet. Loading scenarios on 142 simulators can take a while.

Subject	Issue/Concern	Discussion
Bearing Point	Slow process for team to receive feedback on instructor performance	• Work with Bearing Point and automate surveys and course evaluations. Teach the team how to utilize SIMS for form review.
	Evaluation process for instructors too labor some and time consuming	• We can actually decrease processing time by automating forms and having them enter into the SIMS database. This will also help with the labor considerations needed currently to complete these tasks.
	3 labs to use, but only one being used as a learning resource center	• There is a responsibility for running the LRC (Learning Resource Center). Only one lab is used, the other two are closed

Conclusions:

- By automating the forms, and training the Bearing Point Staff, you will be able to improve processes and reduce the time it will take to identify an instructor that needs assistance and should spend some time in the Cadre Development Center.
- SIMS can improve this process by allowing the CDC to view instructor performances immediately after a course. CDC will be better equipped to evaluate instructors, look at trainee performances, and also compare to others by the use of tools through SIMS.
- By implementing SIMS, that will open the other labs for curriculum access, evaluations, fill out surveys, etc… The thought is to be able to remediate trainees anywhere and also utilize the facility.

Subject	Issue/Concern	Discussion
Course Content	Students do not have access to PCs	• PC labs opening and resource centers need to work in conjunction to one another.
	Course material is located in large books	• They also have the need for sustainment training. They do a lot of distance training.
	Paperwork process is too complicated and to labor intense	• Once a student completes a test, it is then shipped to the Academic Center. At the center, the data is entered and the test is then placed in storage. With the large books, the logistics of entering data from tests, storage and admin fees, all can be reduced by using SIMS and converting to online curriculum.
	Lack of communication and time to instructors when curriculum changes do occur	• SIMS will give the ability to have the course material online and will allow the changes to be immediate and system wide. With an automated notification system to the instructors.

Conclusions:

- SIMS course material is online and available to all trainees which will reduce the amount of material needed by the trainees.
- SIMS enables the instructor to access and display course content anywhere.

Subject	Issue/Concern	Discussion
EMT All Skills Prep Stations	Lack of automated stations and performance assessment. Not all trainees receive feedback on performances.	• The stations are designed for the medics to practice for their national registry exam. There is little or no performance feedback in these sessions. There are minimal or no feedback to trainees with no data being collected.

Conclusions:

- SIMS allows the trainees to rotate through the stations, but also have the instructors mock testing at a few stations, supply feedback and send the trainees back to the stations where they tested below competence.
- Having SIMS automated scenarios programmed and loaded on each simulator, the process revision would make the station an exceptional experience.

General Conclusion:

The 91W CMTP depends heavily on the use of medical simulation. There is a significant gap in the use of simulation and assessment. All forms are completed and assessments are done manually. Most skills stations are being completed with minimal or no evaluation and feedback to the trainees. Most facilitators that I spoke with would like to have a more "automated" process. All trainees are evaluated completely by the judgment of the facilitators. After the 03 visit we had focused on what systems and features we could implement there. In my follow up visit a few weeks ago, it was very clear to me that we needed to pull back on the technology push and start small and simple. There are a number of basic foundation issues that we could address and use as building blocks for the future efforts.

Key barriers exist at the program. Currently having a high turn over of facilitators, lack of assessment tools, high man hours to process paperwork and generate reports. Without the automation of an operational infrastructure, this will only get worse as the 91W program will be increasing by 50% with the addition of the navy and air force trainees.

The program has many areas that medical simulation could be used in, but have run into barriers to use. There are no automated scenarios for instructors to run and no centralized data base for simulation exercises to be entered into. All paperwork is entered manually and some never get entered. By supplying this facility with an infrastructure of SIMS, and automating some of their processes, we should be able to show a drastic improvement in the areas we address. Items like a centralized calendar and requesting system, automated forms for facilitators and trainees, the ability to link forms (surveys) to performances, simulation scenarios that actually have the ability to grade trainees, feedback mechanisms that trainees, facilitators, and operational management can use to assess / improve the processes.

There are no immediate plans to increase the number of instructors with the program. With that being said, the need to decrease the amount of man hours processing paper work, automating systems for instructors, and supplying the tools needed to upgrade the facility to run SIMS is a must.

We have a unique opportunity at the 91W CMTP. With a solution of SIMS, you will improve the processes, decrease labor requirements, and introduce simulation into other areas that they currently can not use it in and better train / assess the medics and facilitators. We will be able to improve the system, efficiency, costs to train, and utilization of tools and facilities.

App. 3 – Kick-off Presentation